

Promotor

Prof. Johan Smitz

Laboratorium Hormonologie &
Tumormerkers, UZ Brussel
Follicle Biology Laboratory
Vrije Universiteit Brussel

Leden van de examencommissie

Prof. Søren Ziebe

Fertility Clinics, Rigshospitalet
University of Copenhagen, Denmark

Prof. Jo Leroy

Departement Diergeneeskundige Wetenschappen
Universiteit Antwerpen

Prof. Isabelle Donnay

Unité des Sciences Vétérinaires
Université Catholique de Louvain

Prof. Michel De Vos

Centrum voor Reproductieve Geneeskunde
UZ Brussel, Vrije Universiteit Brussel

Dr. Greta Verheyen

Centrum voor Reproductieve Geneeskunde
UZ Brussel, Vrije Universiteit Brussel

Dr. Luc Baeyens

Diabetes Research Center
Vrije Universiteit Brussel

Prof. Chris Van Schravendijk, voorzitter

Diabetes Research Center
Vrije Universiteit Brussel



Vrije Universiteit Brussel

FACULTEIT GENEESKUNDE EN FARMACIE

Doctoraat in de Medische Wetenschappen

Academiejaar 2011-2012

UITNODIGING

Voor de openbare verdediging van het
doctoraatsproefschrift van

Sergio Jean Markos ROMERO LOYOLA

donderdag 19 januari 2012

U wordt vriendelijk uitgenodigd op de openbare verdediging van het proefschrift van

Sergio Jean Markos ROMERO LOYOLA

'Epiregulin, as inducer of nuclear maturation in in vitro grown mouse oocytes from cultured early preantral follicles'

Op **donderdag 19 januari 2012** om **17 uur** in auditorium **P. Brouwer** van de Faculteit Geneeskunde & Farmacie Laarbeeklaan 103, 1090 Brussel

Situering van het proefschrift

The improvements in efficacy of cancer treatments, have led to increasing rates of cancer survivors; however these gonadotoxic treatments endanger their fertility. Therefore, adolescent and adult female cancer patients are nowadays offered the possibility to preserve their fertility.

The in vitro culture of ovarian tissue or follicles is an appealing alternative for restoring fertility in cured cancer patients, however the achievements in the field are still limited to be considered a realistic approach for clinical application.

Up to now, mammalian follicles could be successfully cultured in vitro, allowing small follicles to reach fully-grown size, however the oocyte competence to reinitiate and complete meiosis, and to fertilise and develop into embryos is suboptimal. This thesis focused on evaluating the use of recently discovered endogenous messengers of the ovulatory signal (EGF-like factors) as inducers of meiotic resumption and mucification of cumulus cells in mouse cultured cumulus oocyte complexes (COCs) or follicles.

Our results show that maintaining meiotic arrest in culture provides an adequate culture environment that enhances COC survival and oocyte meiotic competence. The EGF-like factor, Epiregulin proved to be a good inducer for meiotic completion, on the condition that COCs isolated from an environment that prevents meiotic reinitiation. Moreover, it is proposed that both LH and EGF signalling are needed for meiotic resumption to occur in cultured follicles, and that EGF signalling maintains cumulus cells functionality preventing luteinisation.

Curriculum Vitae

Sergio Romero was born in Lima, Peru in 1977. He studied Biological Sciences at San Marcos University in Lima, where he graduated in 2002 with specialization in cell biology and genetics. In 2003, he came in Belgium to enrol in the Master Program in Medical and Pharmaceutical Research at the Vrije Universiteit Brussel where he graduated in 2005 with great distinction. His PhD project started in November 2005, in the Follicle Biology Laboratory at the Department of Human Embryology and Genetics (FOBI-EMGE) of the Vrije Universiteit Brussel. His studies in Belgium have been partially supported by the Belgian Development Cooperation who granted him 2 grants for his master and PhD studies.

His research focused on different aspects of the folliculogenesis with special interest in optimization of in vitro systems for culture of ovarian follicles in mouse, as a model for mammalian folliculogenesis.

His research work in Belgium has been presented on national and international meetings and has resulted in 11 publications in international peer-reviewed journals, in 5 of which he is the first author.